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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MILLER, PATRICK L	

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/816,092	MARKS ET AL.	
	Examiner	Art Unit	
	Patrick Miller	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Based on a new reference Miura et al. (6,933,698) and Blomquist (5,876,370), the examiner has withdrawn the allowability of claims 1, 4, and 9 (indicated subject matter from claim 8 would be allowable). See rejections below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 4 is rejected under 35 U.S.C. 102(b) as being anticipated by Katagiri et al. (5,619,111).

- With respect to claim 4, Katagiri et al. discloses a controller for controlling a plurality of motors in a fluid handling system, comprising: a connector input/output port that communicates with at least one sensor in the fluid handling system to obtain sensor data (Fig. 4, feedback from encoders E1-E6); at least one digital signal processor (DSP) and gate driver interface that evaluates the sensor data and generates a control signal based on the sensor data (Fig. 4, #23 receives feedback from E1-E6); at least one commutation module in communication with the at least one DSP and gate driver interface, wherein said at least one communication module controls at least one motor based on the control signal (Fig. 4, #57 controls commutation); and at least one of said plurality of motors shares one DSP and gate driver interface and one motor commutation module (Fig. 4, M1 and M2 share #s 23 and 57).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katagiri et al. (5,619,111) as applied to claim 4 above, and further in view of Blomquist (5,876,370).

   - Katagiri et al. does not disclose the limitations of claims 7 and 8.
   - Blomquist discloses a motor control system that implements a local power supply that powers the motors, and the local power supply is a backup power supply is used to drive the motors (col. 3, ll. 9-15; note that "local" is a relative term). The motivation to use a backup power supply is to keep the system operating in the event of a power failure from the main power supply.
   - Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to implement into the device of Katagiri et al. a backup power supply that is used by the DSPs and gate drivers to drive the motors, thereby providing the advantage of allowing the system to continue driving the motors in the event of a main power failure, as taught by Blomquist.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al. (6,731,089) in view of Miura et al. (6,933,698).

- With respect to claim 1, Cho et al. disclose a controller for controlling a plurality of motors in a fluid handling system (CAN is used in automobile systems, which handle fluid, e.g. fuel, air, etc.), comprising; a connector input/output port that communicates with at least one sensor in the fluid handling system to obtain sensor data (Fig. 1, encoder is the sensor and is input into 'B' at the 'Encoder Input'); at least one digital signal processor (DSP) (Fig. 1, #10) and gate driver (Fig. 1, J1) interface that evaluates the sensor data and generates a control signal based on the sensor data (Fig. 1, #10 evaluates encoder signal and sends PWM control signal; see Fig. 4)); and at least one commutation module in communication with the at least one DSP and gate driver interface, wherein said at least one communication module controls at least one motor based on the control signal (Fig. 1, #34).
- Cho et al. does not disclose the power supplies that operate as recited in claim 1.
- Miura et al. discloses a CAN system that implements a local power supply that powers the motors (Fig. 1, #15; note that "local" is a relative term), and the local power supply is a backup power supply is used to drive the motors (col. 2, ll. 40-53). The motivation to use a backup power supply is to keep the system operating in the event of a power failure from the main power supply.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to implement into the CAN system of Cho et al., a backup power supply that allows the DSP and gate drivers to continue to drive the motors in the event that there is a main power failure, as taught by Miura et al.

5. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palleggi et al. (5,638,387) in view of Blomquist (5,876,370).

- With respect to claim 1, Palleggi et al. disclose a controller for controlling a plurality of motors in a system, comprising: a connector port that communicates with at least one sensor to obtain sensor data (Fig. 8, input from encoders #s 30 and 31); at least one microprocessor, which is interpreted as a DSP, and gate driver interface that evaluates the sensor data and generates a control signal based on the sensor data (Fig. 8, #s 53 and 54 evaluate data from encoders #s 30 and 31); and at least one commutation module in communication with at least one DSP and gate driver interface, wherein the at least one commutation module controls at least one motor based on the control signal (Fig. 8, #s 57 and 58).
- Palleggi et al. does not disclose the local power supply limitations of claim 1.
- Blomquist discloses a motor control system that implements a local power supply that powers the motors, and the local power supply is a backup power supply is used to drive the motors (col. 3, ll. 9-15; note that "local" is a relative term). The motivation to use a backup power supply is to keep the system operating in the event of a power failure from the main power supply.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to implement into the system of Palleggi et al., a backup power supply as disclosed by Blomquist, thereby providing the advantage of allowing the motors to be operated upon main power failure, as taught by Blomquist.

- With respect to claim 3, Palleggi et al. discloses each of the motors has a corresponding microprocessor (now DSP) and gate driver interface and a corresponding commutation module (Fig. 8, #16 has #53 and #57 and #17 has #54 and #58).

6. Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katagiri et al. (5,619,111) in view of Blomquist (5,876,370).

- With respect to claim 1, Katagiri et al. discloses a controller for controlling a plurality of motors in a system, comprising: a connector port that communicates with at least one sensor to obtain sensor data (Fig. 4, #23 receives data from e1-e6); at least one microcomputer, which is interpreted as the DSP, and gate driver interface that evaluates the sensor data and generates a control signal based on the sensor data (Fig. 4, #s 57 in each of #s 6, 7, and 8); and at least one commutation module in communication with at least one microcomputer and gate driver interface, wherein the at least one commutation module controls at least one motor based on the control signal (Fig. 4, #s 52 and 56 in each of #s 6, 7, and 8).
- Katagiri et al. does not disclose the local power supply as disclosed.
- Blomquist discloses a motor control system that implements a local power supply that powers the motors, and the local power supply is a backup power supply is used to drive the motors (col. 3, ll. 9-15; note that "local" is a relative term). The motivation to use a backup power supply is to keep the system operating in the event of a power failure from the main power supply.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to implement into the device of Katagiri et al. a backup

power supply that is used by the DSPs and gate drivers to drive the motors, thereby providing the advantage of allowing the system to continue driving the motors in the event of a main power failure, as taught by Blomquist.

- With respect to claim 2, Katagiri et al. discloses each microcomputer (now DSP) and gate driver interface has a corresponding commutation module (Fig. 4, #57 has #52 in each of #s 6, 7, and 8).
- With respect to claims 5 and 6, Katagiri et al. discloses at least one of the plurality of motors is a binary-function, variable speed motor, and wherein the at least one commutation module controls said variable speed motor (col. 4, ll. 23-25; servo motors are reversible (binary) and are variable speed).

7. Claims 9, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tisdale et al. (6,553,770) in view of Cox-Smith et al. (6,771,032).
   - With respect to claim 9, Tisdale et al. discloses an integrated fluid handling system, comprising: a skid mounting a plurality of motors (col. 1, ll. 14-15); a plurality of fluid-handling devices associated with said plurality of motors (Fig. 3B; water pumps 114 and 116 driven by electric motors; col. 4, ll. 48-52).
   - Tisdale et al. does not disclose the motor control features of claim 9.
   - Cox-Smith et al. discloses a plurality of sensors that generate sensor data corresponding to the operation of said plurality of devices (Fig. 5, LVDT is a position sensor, and the speed and current feedback loops imply the use of a current sensor); a multi-motor controller that controls said plurality of motors, the multi-motor controller having a connector input/output port that communicates with at least one sensor in the fluid handling system to obtain sensor data from

said plurality of sensors (Fig. 1, #12 controls both motors and receives position and current feedback data); a plurality of digital signal processors (DSP) and gate driver interfaces that evaluate the sensor data from said plurality of sensors and generate a control signal based on the sensor data (Fig. 1, #12 is interpreted as the DSP, and it controls the gate drivers, #30 and 30'); and a plurality of commutation modules, each commutation module corresponding to one of said plurality of DSP and gate driver interfaces, wherein each commutation module controls at least one motor based on the control signal (Fig. 5, commutation module is #40 and #s 24, 26, and 28 based on the control signal from #34 and the speed profile). The motivation to control the motors using the control system disclosed by Cox-Smith et al. is to synchronize motor operation (col. 2, ll. 38-43).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that the motors that control the pumps in Tisdale et al. could include the control features disclosed by Cox-Smith et al., thereby providing the advantage of synchronizing the motors, as taught by Cox-Smith et al.
- With respect to claim 10, Cox-Smith et al. discloses each motor having a corresponding DSP and gate driver interface and one commutation module (each motor, #s 8 and 10, have #s 24, 26, 28, and 30).
- With respect to claim 13, at least one of the plurality of motors is a variable speed motor, and the commutation module controls at least one variable speed motor (Fig. 5, speed profile means the motors are variable speed and #s 40, 24, 26, and 28 control the motor at different speeds).

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tisdale et al. and Cox-Smith et al. as applied to claim 9 above, and further in view of Cho et al. (6,731,089).

   - With respect to claim 12, Cox-Smith et al. discloses controlling the motors using PWM control, which is effectively a digital signal, thus, controlling the motor via binary controls (making the motor a binary function motor (Fig. 5, #30 is the PWM signal). Tisdale et al. does not disclose the controller further comprising a card to control the binary function motor.
   - Cho et al. discloses a card that contains a controller that controls PWM signals to motor (Fig. 1, # 'A' contains the controller). The motivation to implement the controller on a card is to increase modularity.
   - Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to make the controller of Tisdale et al. and Cox-Smith et al. on a card, thereby providing the advantage of increasing modularity, as taught by Cho et al.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tisdale et al. and Cox-Smith et al. as applied to claim 9 above, and further in view of Blomquist (5,876,370).

   - Tisdale et al. and Cox-Smith et al. do not disclose a local backup power supply as claimed.
   - Blomquist discloses a motor control system that implements a local power supply that powers the motors, and the local power supply is a backup power supply is used to drive the motors (col. 3, ll. 9-15; note that "local" is a relative term). The

motivation to use a backup power supply is to keep the system operating in the event of a power failure from the main power supply.

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention o use a backup power supply in the system of Tisdale et al. and Cox-Smith et al., thereby providing the advantage of allowing the pumps to continue operating in the event of a main power failure, as taught by Blomquist.

10. Claims 9, 11-13, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tisdale et al. (6,553,770) in view of Katagiri et al. (5,619,111).

- With respect to claim 9, Tisdale et al. discloses an integrated fluid handling system, comprising: a skid mounting a plurality of motors (col. 1, ll. 14-15); a plurality of fluid-handling devices associated with said plurality of motors (Fig. 3B; water pumps 114 and 116 driven by electric motors; col. 4, ll. 48-52).
- Tisdale et al. does not disclose the motor control features of claim 9.
- Katagiri et al disclose a system comprising: a plurality of motors (Fig. 4, M1-M6); a plurality of devices associated with the plurality of motors (Fig. 4, load attached to motors (not shown)); a plurality of sensors that generate data corresponding to the operation of the plurality of devices (Fig. 4, E1-E6); a multi-motor controller that controls the plurality of motors (Fig. 4, #9); the multi-motor controller having a connector that communicates with at least one sensor to obtain sensor data (Fig. 4, connector #23 receives sensor data e1-e6); a plurality of microcomputers, which are interpreted as DSPs, a plurality of gate driver interfaces that evaluate the sensor data and generate a control signal based on the sensor data (Fig. 4, #s 57 in #s 6, 7, and 8, respectively); and a plurality of

commutation modules, each commutation module corresponding to one of the plurality of DSP and gate drivers interfaces, and where each commutation module controls at least one motor based on the control signal (Fig. 4, #s 51 and 55 in #s 6, 7, and 8, respectively). The motivation to configure the motor control system as disclosed by Katagiri et al. is to improve control reliability (col. 2, ll. 32-37).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that servomotors can control the pumps in Tisdale et al., and thus, providing the advantage of improving motor control reliability, as taught by Katagiri et al.
- With respect to claim 11, Katagiri et al. discloses at least one of the plurality of motors shares one DSP and gate driver interface and one motor commutation module (Fig. 4, M1 and M2 share #57).
- With respect to claims 12 and 13, Katagiri et al. discloses at least one of the plurality of motors is a binary-function, variable speed motor, and wherein the at least one commutation module controls said variable speed motor (col. 4, ll. 23-25; servo motors are reversible (binary) and are variable speed).
- With respect to claim 15, the system further comprises a system controller that controls operation of the plurality of motors according to an instruction from the multi-motor controller (Fig. 4, external setting device #26 communicates via #72 to #9; col. 4, ll. 28-31).
- With respect to claim 16, the system controller is connected to the multi-motor controller via a connector selected from the group consisting of a serial connector

or an Ethernet connector (Fig. 7, #72 is a serial connector that connects #26 to #9).

- With respect to claim 17, the system comprises a plurality of multi-motor controllers that are connected to the system controller (Fig. 7, shows a plurality of #9s ["stacked" boxes]).

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tisdale et al. and Katagiri et al. as applied to claim 9 above, and further in view of Blomquist (5,876,370).

- Tisdale et al. and Katagiri et al. do not disclose the limitations of claim 14.
- Blomquist discloses a motor control system that implements a local power supply that powers the motors, and the local power supply is a backup power supply is used to drive the motors (col. 3, ll. 9-15; note that "local" is a relative term). The motivation to use a backup power supply is to keep the system operating in the event of a power failure from the main power supply.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to implement into the device of Tisdale et al. and Katagiri et al. a backup power supply that is used by the DSPs and gate drivers to drive the motors, thereby providing the advantage of allowing the system to continue driving the motors in the event of a main power failure, as taught by Blomquist.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Miller
Examiner
Art Unit 2837

pm
August 26, 2005

MARLON T. FLETCHER
PRIMARY EXAMINER